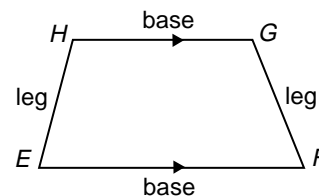


Study Guide

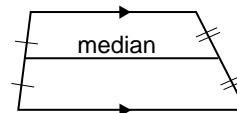
Student Edition
Pages 321–328**Trapezoids**

A **trapezoid** is a quadrilateral with exactly one pair of parallel sides. The parallel sides are called **bases**, and the nonparallel sides are called **legs**. In trapezoid $EFGH$, $\angle E$ and $\angle F$ are called **base angles**. $\angle H$ and $\angle G$ form the other pair of base angles.



A trapezoid is an **isosceles trapezoid** if its legs are congruent.

The **median** of a trapezoid is the segment that joins the midpoints of the legs.

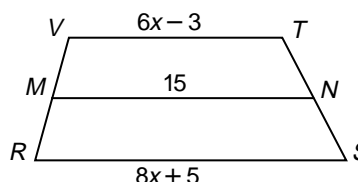


The following theorems about trapezoids can be proved.

- Both pairs of base angles of an isosceles trapezoid are congruent.
- The diagonals of an isosceles trapezoid are congruent.
- The median of a trapezoid is parallel to the bases, and its measure is one-half the sum of the measures of the bases.

Example: Given trapezoid $RSTV$ with median \overline{MN} , find the value of x .

$$\begin{aligned} MN &= \frac{1}{2}(VT + RS) \\ 15 &= \frac{1}{2}(6x - 3 + 8x + 5) \\ 15 &= \frac{1}{2}(14x + 2) \\ 15 &= 7x + 1 \\ 14 &= 7x \\ 2 &= x \end{aligned}$$



$HJKL$ is an isosceles trapezoid with bases \overline{HJ} and \overline{LK} , and median \overline{RS} . Use the given information to solve each problem.

1. If $LK = 30$ and $HJ = 42$, find RS .
2. If $RS = 17$ and $HJ = 14$, find LK .
3. If $RS = x + 5$ and $HJ + LK = 4x + 6$, find RS .
4. If $m\angle LRS = 66$, find $m\angle KSR$.
5. Find the length of the median of a trapezoid with vertices at $C(3, 1)$, $D(10, 1)$, $E(7, 9)$, and $F(5, 9)$.

